

PICTURE OF THE MONTH

The Life History of a Huge Pack-Ice Field

TILLMANN MOHR

Deutscher Wetterdienst, Offenbach/Main, Germany

The separation of large pack-ice fields from the arctic icecap in early spring is a well-known phenomenon. One of the first satellite pictures from the Greenland Sea after the long polar night ended (about Mar. 10, 1970) showed an icefield extending like a peninsula from the east Greenland pack into the Greenland Sea between 70° – 75° N and 0° – 20° W. Two weeks later, due to continuous northerly winds sometimes reaching 40 kt, this peninsula was detached from the Greenland pack and could be seen as a separated icefield (A in fig. 1) for the first time on Mar. 23, 1970, within 70° – 75° N and 0° – 10° W. It is believed that a huge area of pack ice of such dimension (400 km in length) was never recognized previously on satellite pictures.

Fortunately, the weather situation was very favorable for observing the further life cycle of this separated pack-ice field. During the period from March 23 to the end of April, the Greenland Sea was again under the influence of a well-established northerly airflow between a high-pressure area over Greenland and a low-pressure system over northern Scandinavia. In the outflowing cold air

(temperatures of about -10° to -20° C), the typical formation (figs. 2 and 3) of long parallel cloud streets (Cu and Sc) took place. This low-level airflow was not only deformed by the island of Jan Mayen (71° N, 9° W) with its 2270-m glacier-covered peak called Beerenberg, standing out in figures 1 and 4 like a large iceberg or ice floe, but also by the huge pack-ice field. Some kind of convergence, probably due to the changing temperature field and different drag coefficient, appears in figures 2 and 3. It is also worth noticing that, during this period of northerly winds, the icefield drifted about 1° to the south (compare its position in figs. 2 and 3).

Due to the favorable weather conditions, mostly fair to partly cloudy over the Greenland Sea, the steady melting process of the huge icefield could be followed on daily satellite pictures. The four ESSA 8 photographs, received at APT Station Offenbach/Germany, show this process. It took about 1 mo to melt this area of pack ice, and the last remnants did not disappear before the end of April.

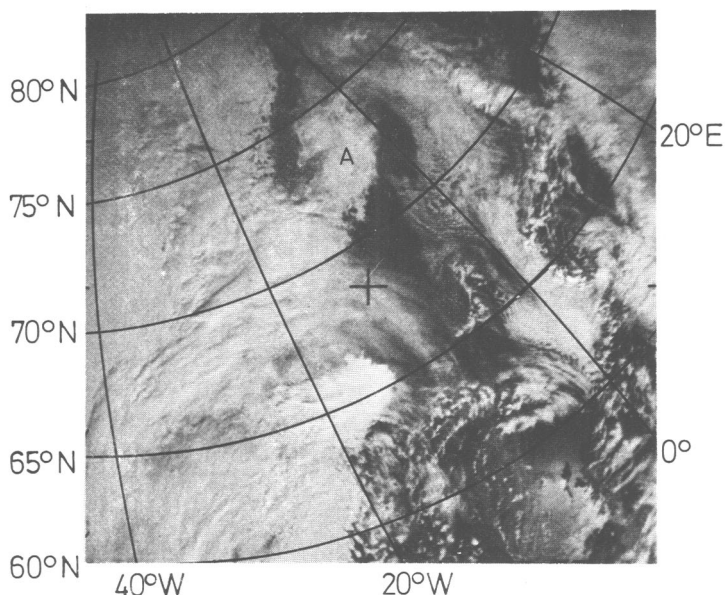


FIGURE 1.—ESSA 8 photograph, pass 5810, at 1214 GMT on Mar. 23, 1970.

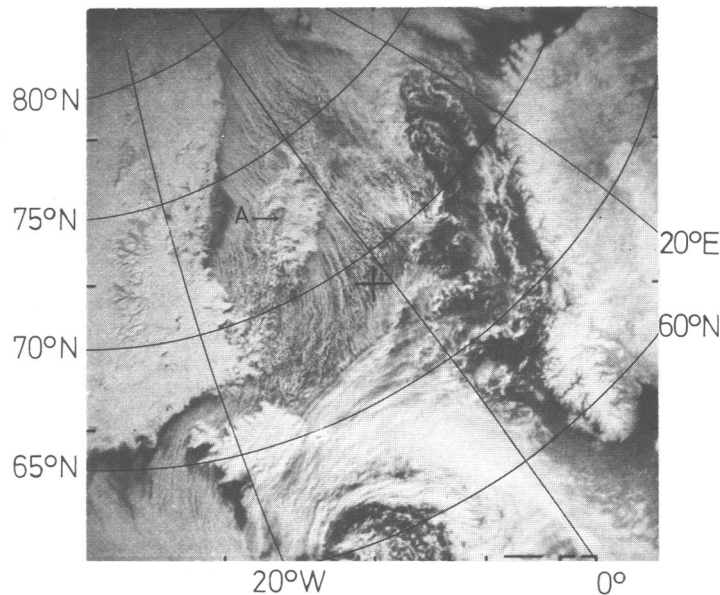


FIGURE 2.—ESSA 8 photograph, pass 5885, at 1136 GMT on Mar. 29, 1970.

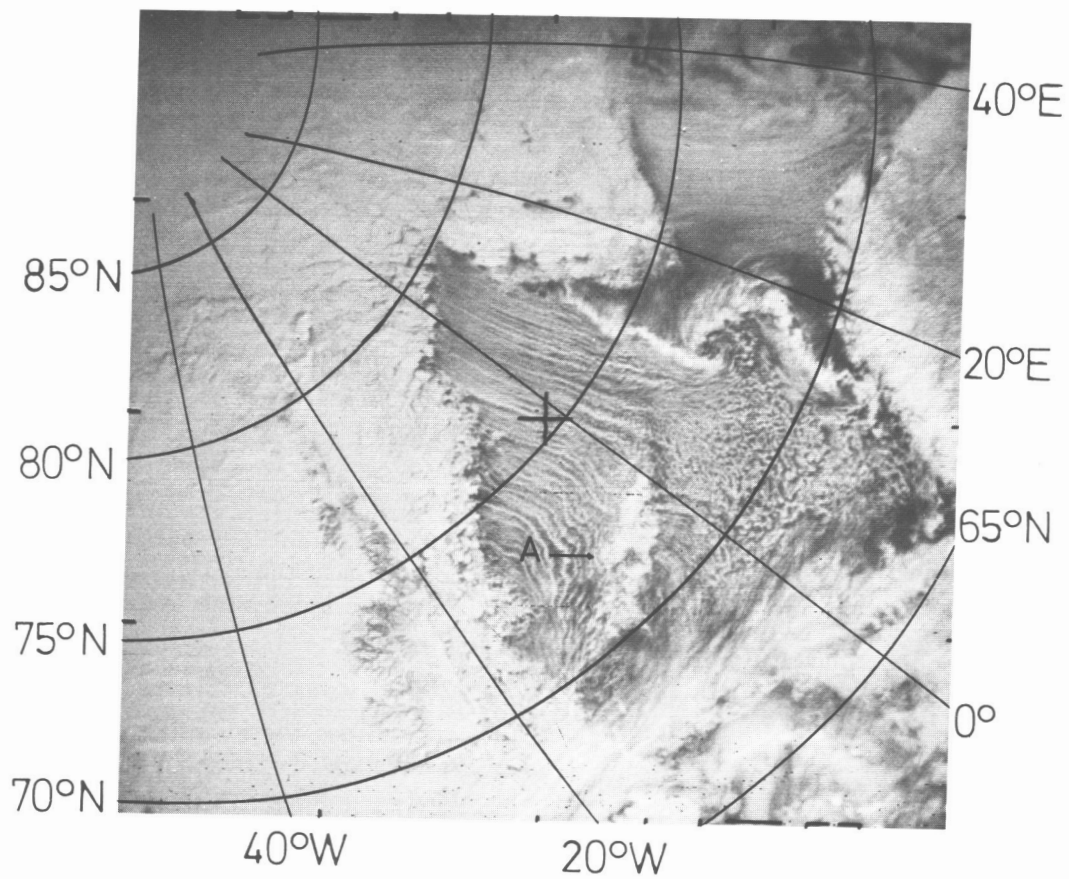


FIGURE 3.—ESSA 8 photograph, pass 6074, at 1252 GMT on Apr. 13, 1970.

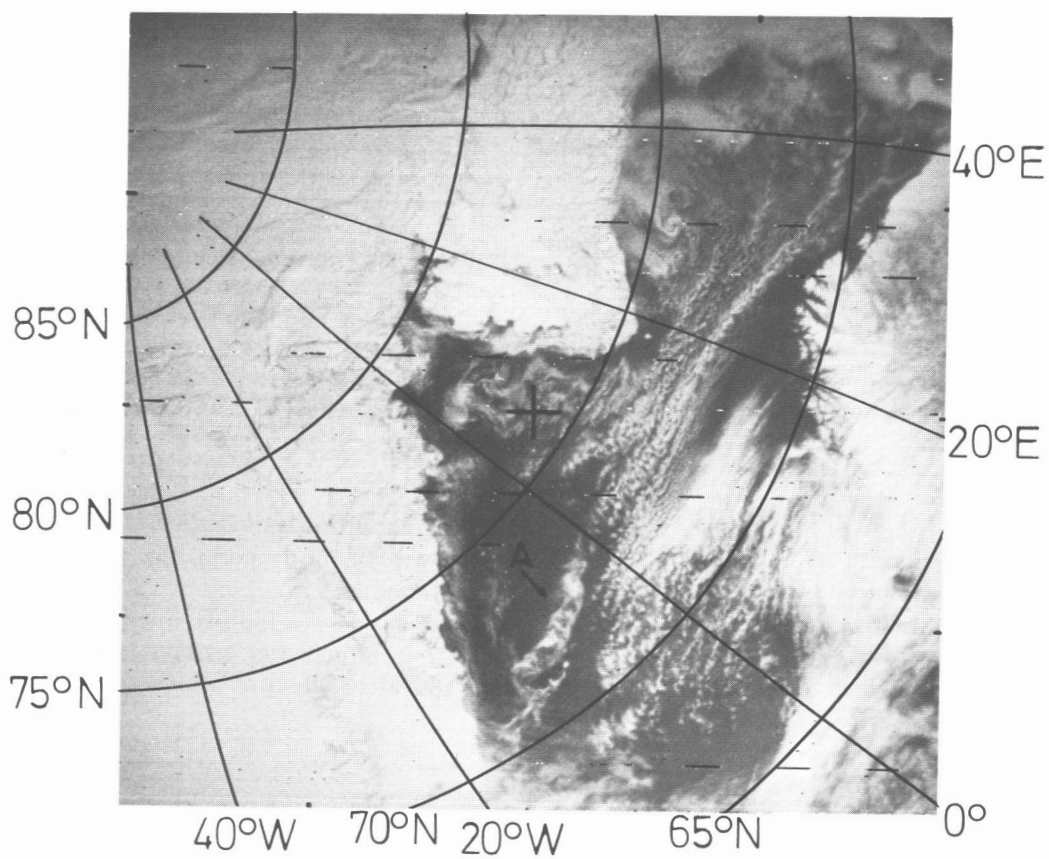


FIGURE 4.—ESSA 8 photograph, pass 6212, at 1241 GMT on Apr. 24, 1970.